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=> d his

     (FILE 'HOME' ENTERED AT 12:30:48 ON 25 FEB 2008)
     FILE 'CA' ENTERED AT 12:30:58 ON 25 FEB 2008
L1    797 S WHISPER?(1A)GALLERY
L2  60832 S OPTIC?(1A)(FIBER OR FIBRE) OR OPTICALFIB? OR
FIBEROPTIC?
L3 311453 S MICROSTRUCTURE OR NANOSTRUCTURE OR(MICRO OR
           NANO)(1W)STRUCTURE
L4  19263 S PHOTONIC
L5  38829 S MICROSPHERE OR (TINY OR MICRO OR NANO)(1W)(BALL
           OR SPHERE OR BEAD) OR NANOSPHERE OR MICROBALL OR
           NANOBALL OR MICROBEAD OR NANOBEAD
L6    652 S L3,L5 (5A)L4
L7    101 S L5(5A)L2
L8    168 S L1,L6 AND(SENSOR OR BIOSENS? OR DETECTOR OR
           ANALY!ER OR MONITOR OR PROBE)
L9     31 S L1,L6 AND(RECEPTOR OR BINDING OR COMPLEXING OR
           LIGAND OR HYBRIDI?)
L10   276 S L7-9
L11   101 S L10 AND PY<2004
L12    30 S L10 AND PATENT/DT
     FILE 'BIOSIS' ENTERED AT 12:44:49 ON 25 FEB 2008
L13     7 S L11
     FILE 'MEDLINE' ENTERED AT 12:45:22 ON 25 FEB 2008
L14    18 S L11
     FILE 'INSPHYS' ENTERED AT 12:46:00 ON 25 FEB 2008
L15     1 S L11
     FILE 'INSPEC' ENTERED AT 12:46:27 ON 25 FEB 2008
L16   165 S L11
     FILE 'CA' ENTERED AT 12:46:58 ON 25 FEB 2008
          E ARNOLD S/AU
L17   380 S E3,E6-10,E12,E15,E61-62,E65-88
L18    16 S L10 AND L17
     FILE 'BIOSIS' ENTERED AT 12:51:07 ON 25 FEB 2008
L19     3 S L18
     FILE 'MEDLINE' ENTERED AT 12:51:30 ON 25 FEB 2008
L20     5 S L18
     FILE 'INSPEC' ENTERED AT 12:51:50 ON 25 FEB 2008
L21    15 S L18
     FILE 'CA, BIOSIS, MEDLINE, INSPHYS, INSPEC' ENTERED AT
           12:53:24 ON 25 FEB 2008
L22   258 DUP REM L11 L12 L18 L13 L19 L14 L20 L15 L16 L21
           (103 DUPLICATES REMOVED)

=> d bib,ab l22 1-258
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L22 ANSWER 5 OF 258 CA COPYRIGHT 2008 ACS on STN
AN 147:332688 CA
TI Whispering gallery microresonator colorimetric probes and colorimetric systems using them
IN Strecker, Brian N.; Rosenberger, Albert T.
PA Nomadics, Inc., USA
SO U.S., 23pp., Cont.-in-part of U.S. Ser. No. 414,076, abandoned.
PI US 7266271 B2 20070904 US 2002-293896 20021112
PRAI US 1999-414076 B2 19991006
AB Probes for use in a system for performing colorimetric testing of a medium are described which comprise a microresonator having a path length and supporting a plurality of whispering gallery mode resonance frequencies within a resoln. bandwidth of the system; a first waveguide receiving light from a predominantly incoherent light source, the light having a frequency bandwidth greater than the spacing between the whispering gallery mode resonance frequencies, the first waveguide evanescently coupled to the microresonator so that supported whispering gallery mode resonance frequencies are coupled from the first waveguide into the microresonator and light at frequencies not resonant with the microresonator do not couple into the microresonator; and a second waveguide evanescently coupled to the microresonator so that a portion of the whispering gallery mode resonance frequencies are coupled out of the microresonator and into the second waveguide. Colorimetric systems are described which also include a light source for providing a multitude of optical resonances and a reader for analyzing the resonances received from the second waveguide.

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L22 ANSWER 26 OF 258 CA COPYRIGHT 2008 ACS on STN
AN 140:353197 CA
TI Enhancing the sensitivity of a microsphere sensor
IN Arnold, Stephen; Teraoka, Iwao; Vollmer, Frank
PA Polytechnic University, USA
SO PCT Int. Appl., 38 pp.
PI WO 2004038370 A2 20040506 WO 2003-US33449 20031022
US 2004137478 A1 20040715 US 2003-690979 20031022
PRAI US 2002-420436P P 20021022
WO 2003-US33449 W 20031022

AB   Microsphere sensors (i) having receptors selectively substantially provided at only an equator region, (ii) formed of a relative high IR material, and/or (iii) having a relatively small radius are provided with improved sensitivity. Such a microsphere sensor may be made by selectively treating an equator region of the microsphere forming a small concd. receptor band on the high sensitivity portion of the microsphere surface. Changing the selected laser frequency applied to the microsphere sensor to a shorter wavelength also improves sensitivity. Phys. properties of the microsphere sensor system: index of refraction, laser frequency, and microsphere radius may be adjusted in concert to match the target entity mol. size. These improvements in sensitivity may allow detection and/or identification of unknown target entities based on detectable step shifts observable in light modes due to the absorption of even a single mol. as small as ~200,000 Da.

L22 ANSWER 27 OF 258 CA COPYRIGHT 2008 ACS on STN
AN   141:300287 CA
TI   Using a change in one or more properties of light in one or more microspheres for sensing chemicals such as explosives and poison gases
IN   Arnold, Stephen; Teraoka, Iwao; Okamoto, Yoshiyuki; Vollmer, Frank
PA   USA
SO   U.S. Pat. Appl. Publ., 32 pp.
PI   US 2004196465   A1   20041007   US 2003-735247 20031212
PRAI US 2002-432764P   P   20021212
AB   Detecting and/or measuring a chem. substance, such as explosives or poison gases, using a change in a property of light passing through a microsphere of a sensor. Since the microsphere has a large quality factor, the sensor is extremely sensitive. The sensor includes the microsphere coupled with at least one optical fiber. The surface of the microsphere includes receptors complementary to the chem. substance.

L22 ANSWER 28 OF 258 CA COPYRIGHT 2008 ACS on STN
AN   141:113923 CA
TI   Silicon on insulator resonator sensors and modulators and method of operating the same
IN   Scherer, Axel; Dickinson, Alex

PA   California Institute of Technology, USA
SO   U.S. Pat. Appl. Publ., 18 pp.
PI   US 2004146431   A1   20040729   US 2003-729242
     20031204
     US 7095010   B2   20060822
PRAI US 2002-430846P   P   20021204
AB   A microsensor for sensing a substance comprises a substrate, a source of light, an optical microresonator or semiconductor optical ring microresonator fabricated in the substrate exposed to the substance to allow an interaction between the microresonator and substance, a waveguide coupling the source of light to the optical microresonator, and a detector coupled to the microresonator to measure the resonant frequency of the microresonator, the absorption loss of whispering gallery modes in the microresonator or the quality factor of the microresonator, which are sensitive to interaction of the substance with the optical microresonator. A polymer coating disposed on the microresonator is reactive with the substance. The microsensor may comprise a plurality of microresonators corresponding to a plurality of different resonant frequencies to generate an absorption spectrum of the substance.

L22 ANSWER 83 OF 258 CA
AN   137:75352 CA
TI   Protein detection by optical shift of a resonant microcavity
AU   Vollmer, F.; Braun, D.; Libchaber, A.; Khoshsima, M.; Teraoka, I.; Arnold, S.
CS   Center for Studies in Physics and Biology, Rockefeller University, New York, NY, 10021, USA
SO   Applied Physics Letters (2002), 80(21), 4057-4059
AB   We present an optical biosensor with unprecedented sensitivity for detection of unlabeled mols. Our device uses optical resonances in a dielec. microparticle (whispering gallery modes) as the phys. transducing mechanism. The resonances are excited by evanescent coupling to an eroded optical fiber and detected as dips in the light intensity transmitted through the fiber at different wavelengths. Binding of proteins on the microparticle surface is measured from a shift in resonance wavelength. We demonstrate the sensitivity of our device by measuring adsorption of bovine serum albumin and we show its use as a biosensor by detecting streptavidin binding to biotin.

L22 ANSWER 95 OF 258 INSPEC (C) 2008 IET on STN
AN 2003:7504408 INSPEC
TI High-Q whispering-gallery mode sensor in liquids
AU Nadeau, J.L.; Ilchenko, V.S.; (Jet Propulsion Lab., California Inst. of Technol., Pasadena, CA, USA), Kossakovski, D.; Bearman, G.H.; Maleki, L.
SO Proceedings of the SPIE - The International Society for Optical Engineering (2002), vol.4629, p. 172-80, 11 refs.
AB Optical sensing of biomolecules on microfabricated glass surfaces requires surface coatings that minimize nonspecific binding while preserving the optical properties of the sensor. Microspheres with whispering-gallery (WG) modes can achieve quality factor (Q) levels many orders of magnitude greater than those of other WG-based microsensors: greater than 1010 in air, and greater than 109 in a variety of solvents, including methanol, H2O and phosphate buffered saline (PBS). The presence of dyes that absorb in the wavelength of the WG excitation in the evanescent zone can cause this Q value to drop by almost 3 orders of magnitude. Silanization of the surface with mercapto-terminal silanes is compatible with high Q (>109), but chemical cross-linking of streptavidin reduces the Q to 105-106 due to build-up of a thick, irregular layer of protein. However, linkage of biotin to the silane terminus preserves the Q at a 2×107 and yields a reactive surface sensitive to avidin-containing ligands in a concentration-dependent manner. Improvements in the reliability of the surface chemistry show promise for construction of an ultrasensitive biosensor.

L22 ANSWER 104 OF 258 CA COPYRIGHT 2008 ACS on STN
AN 135:16337 CA
TI Resonant optical cavities for high-sensitivity, high-throughput biological sensors and methods
IN Blair, Steven M.
PA University of Utah Research Foundation, USA
SO PCT Int. Appl., 44 pp.
PI WO 2001040757 A2 20010607 WO 2000-US41138 20001012
PRAI US 1999-159366P P 19991014
AB Biosensors including resonant optical cavities. The resonant optical cavities are shaped so as to generate whispering gallery modes, which increase the quality

factors of the cavities and facilitate the detection of analytes in a sample with enhanced sensitivity. The sizes of the resonant optical cavities facilitate their use in biosensors that include arrays of sensing zones. Accordingly, the resonant optical cavities may be used in high-d. sensing arrays that can be read in real-time and in parallel. Thus, the resonant optical cavities are useful for detecting small concns. of samples in real-time and with high throughput. Different embodiments of the biosensors are also disclosed, as are methods for using the biosensors.

L22 ANSWER 121 OF 258 INSPEC (C) 2008 IET on STN
AN 2001:6867426 INSPEC
TI Resonant-enhanced evanescent-wave fluorescence biosensing with cylindrical optical cavities
AU Blair, S.; Yan Chen (Dept. of Electr. Eng., Utah Univ., Salt Lake City, UT, USA)
SO Applied Optics (1 Feb. 2001), vol.40, no.4, p. 570-82, 64 refs.
AB We show that the artificial resonances of dielectric optical cavities can be used to enhance the detection sensitivity of evanescent-wave optical fluorescence biosensors to the binding of a labeled analyte with a biospecific monolayer. Resonant coupling of power into the optical cavity allows for efficient use of the long photon lifetimes (or equivalently, the high internal power) of the high-Q whispering gallery modes to increase the probability of photon absorption into the fluorophore, thereby enhancing fluorescence emission. A method to compare the intrinsic sensitivity between resonant cavity and waveguide formats is also developed. Using realistic estimates for dielectric cylindrical cavities in both bulk and integrated configurations, we can expect sensitivity enhancement; by at least an order of magnitude over standard waveguide evanescent sensors of equivalent sensing geometries. In addition, the required sample volume can be reduced significantly. The cylindrical cavity format is compatible with a large variety of sensing modalities such as immunoassay and molecular diagnostic assay

L22 ANSWER 151 OF 258 CA COPYRIGHT 2008 ACS on STN
AN 133:216929 CA
TI Evanescent wave sensor using microsphere whispering-gallery modes

AU   Rosenberger, Albert T.; Rezac, J. P.
CS   Dep. Phys. Cent. Laser Photonics Res., Oklahoma State Univ., Stillwater, OK, USA
SO   Proceedings of SPIE-The International Society for Optical Engineering (2000), 3930(Laser Resonators III), 186-192
AB   The high Q of a microsphere whispering-gallery mode allows for sensitive resonant detection of atoms or mols. The species being detected absorbs energy from the mode's evanescent field. It can be identified by knowing the resonant wavelength of the driving laser, and its concn. can be detd. from the absorption signal on the light in reflection or transmission. High sensitivity results from the long effective absorption path length provided by the whispering-gallery mode's large Q. There are many possible implementations of and applications for such a sensor; several of each are described herein. In particular, for atm. trace-gas sensing, the microsphere has the potential to rival the performance of the multipass cell, but in a much more compact and rugged system. The authors' construction of a prototype system for detection of CO, CO2, and NH3 is described.

L22 ANSWER 158 OF 258 CA COPYRIGHT 2008 ACS on STN
AN   133:112164 CA
TI   Observation of Critical Coupling in a Fiber Taper to a Silica-Microsphere Whispering-Gallery Mode System
AU   Cai, Ming; Painter, Oskar; Vahala, Kerry J.
CS   Department of Applied Physics, California Institute of Technology, Pasadena, CA, 91125, USA
SO   Physical Review Letters (2000), 85(1), 74-77
AB   The authors present the observation of crit. coupling in a high-Q fused-SiO2 microsphere whispering-gallery mode resonator coupled to a fiber taper. Extremely efficient and controlled power transfer to high-Q (~107) resonators was demonstrated. Off-resonance scattering loss is <0.3%. On-resonance extinction in transmitted optical power through the fiber coupler was measured ≤26 dB at the crit. coupling point. This result opens up a range of new applications in fields as diverse as near-field sensing and quantum optics.

L22 ANSWER 170 OF 258   MEDLINE on STN
AN   2007737091   IN-PROCESS
TI   Pigtailing the high-Q microsphere cavity: a simple

fiber coupler for optical whispering-gallery modes.
AU   Ilchenko V S; Yao X S; Maleki L
SO   Optics letters, (1999 Jun 1) Vol. 24, No. 11, pp. 723-5.
AB   We demonstrate a simple method for efficient coupling of standard single-mode optical fibers to a high- Q optical microsphere cavity. Phase-matched excitation of whispering-gallery modes is provided by an angle-polished fiber tip in which the core-guided wave undergoes total internal reflection. In the experimental setup, which included a microsphere with both an input and an output coupler, the total fiber-to-fiber transmission at resonance reached 23% (total insertion loss, 6.3 dB), with loaded quality factor Q>/=3x10(7) and unloaded Q approximately 1.2x10(8) at 1550 nm. A simple pigtailing method for microspheres permits their wider use in fiber optics and photonics devices.

L22 ANSWER 207 OF 258 INSPEC (C) 2008 IET on STN
AN   1996:5284309 INSPEC
TI   Morphology-dependent resonances of a microsphere-optical fiber system
AU   Griffel, G.; Arnold, S.; Taskent, D.; Serpenguzel, A.; (Microparticle Photophys. & Photonics Lab., Polytechnic Univ. of New York, Brooklyn, NY, USA), Connolly, J.; Morris, N.
SO   Optics Letters (15 May 1996), vol.21, no.10, p. 695-7, 8 refs.
AB   Morphology-dependent resonances of microspheres sitting upon an index-matched single-mode fiber half-coupler are excited by a tunable 753-nm distributed-feedback laser. Resonance peaks in the scattering spectra and associated dips in the transmission spectra for the TE and TM modes are observed. We present a new model that describes this interaction in terms of the fiber-sphere coupling coefficient and the microsphere's intrinsic quality factor and Q0. This model enables us to obtain expressions for the finesse and the and factor of the composite particle-fiber system, the resonance width, and the depth of the dips measured in the transmission spectra. Our model shows that index matching improves the coupling efficiency by more than a factor of 2 compared with that of a non-index-matched system

L22 ANSWER 222 OF 258 INSPEC (C) 2008 IET on STN

AN 1995:4944498 INSPEC
TI Excitation of resonances of microspheres on an optical fiber
AU Serpenguzel, A.; Arnold, S.; (Microparticle Photophys. Lab., Polytechnic Univ., Brooklyn, NY, USA), Griffel, G.
SO Optics Letters (1 April 1995), vol.20, no.7, p. 654-6, 16 refs.
AB Morphology-dependent resonances (MDR's) of solid microspheres are excited by using an optical fiber coupler. The narrowest measured MDR linewidths are limited by the excitation laser linewidth (<0.025 nm). Only MDR's, with an on-resonance to off-resonance intensity ratio of 104, contribute to scattering. The intensity of various resonance orders is understood by the localization principle and the recently developed generalized Lorentz-Mie theory. The microsphere fiber system has potential for becoming a building block in dispersive microphotonics. The basic physics underlying our approach may be considered a harbinger for the coupling of active photonic microstructures such as microdisk lasers.

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STN INTERNATIONAL LOGOFF AT 12:55:25 ON 25 FEB 2008